Amendment In the Claims

1. (currently amended) A genetically engineered organism selected from the group consisting of bacteria and plants producing polyhydroxyalkanoate (PHA), the improvement comprising providing the organism with a transgene encoding an enzyme having the catalytic activity of 3-hydroxyacyl-ACP thioesterase and one or more transgenes encoding enzymes having the catalytic activity of acyl-CoA synthetase or acyl CoA transferase so that medium chain length PHA accumulates through the fatty acid biosynthesis pathway.

2. (canceled).

3. (currently amended) The organism of claim ~~2~~ 1 wherein the acyl-CoA synthetase is 3-hydroxyacyl-CoA synthetase.

4. (currently amended) The organism of claim ~~2~~ 1 comprising a transgene alkK encoding an acyl-CoA synthetase.

5. (currently amended) The organism of claim ~~2~~ 1 expressing a heterologous 3-hydroxyacyl-CoA synthetase activity.

6. (previously presented) The organism of claim 1 expressing a heterologous 3-hydroxyacyl-CoA synthetase activity.

7. (previously presented) The organism of claim 1 wherein the enzyme is modified to enhance expression in the genetically engineered organism.

8. (previously presented) The organism of claim 1 expressing an enzyme selected from the group consisting of 3-hydroxyacyl-ACP thioesterase, medium chain length PHA synthase,

and medium chain length 3-hydroxy fatty acid acyl CoA synthase, wherein the organism is a plant cell, plant tissue, or whole plant.

9. (original) The organism of claim 8 further expressing selectable marker genes, wherein the organism is a whole plant.

10. (previously presented) The organism of claim 1 expressing an enzyme selected from the group consisting of 3-hydroxyacyl-ACP thioesterase, a PHA synthase that incorporates medium chain length hydroxy acids, and medium chain length 3-hydroxy fatty acid acyl CoA synthetase, wherein the organism is a bacteria.

11. (original) The organism of claim 8 wherein expression of the transgene is targeted to a tissue or organelle selected from the group consisting of seeds, leaf, plastids, and peroxisomes.

12. (original) The organism of claim 10 wherein the bacteria is *E. coli* and PHA accumulates within the bacteria.

13. (currently amended) A method of engineering a PHA biosynthetic pathway in a transgenic organism selected from the group consisting of bacteria and plants which produce polyhydroxyalkanoate (PHA), the improvement comprising providing the organism with ~~a construct~~ one or more constructs comprising a transgene encoding an enzyme having the catalytic activity of 3-hydroxyacyl-ACP thioesterase and one or more transgenes encoding enzymes having the catalytic activity of acyl-CoA synthetase or acyl CoA transferase so that medium chain length PHA accumulates through the fatty acid biosynthesis pathway.

14. (canceled).

15. (currently amended) The method of claim ~~14~~ 13 wherein the construct comprises a transgene encoding a 3-hydroxy acyl-CoA synthetase.

16. (original) The method of claim 15 wherein the construct further comprises a transgene encoding a PHA synthase.

17. (original) The method of claim 16 wherein the organism is a plant.

18. (original) The method of claim 16 wherein the construct expresses an enzyme selected from the group consisting of 3-hydroxyacyl-ACP thioesterase, medium chain length PHA synthase, and medium chain length 3-hydroxy fatty acid acyl CoA synthase, wherein the organism is a plant cell, plant tissue, or whole plant.

19. (original) The method of claim 16 wherein the construct expresses an enzyme selected from the group consisting of 3-hydroxyacyl-ACP thioesterase, a PHA synthase that incorporates medium chain length hydroxy acids, and medium chain length 3-hydroxy fatty acid acyl CoA synthetase, wherein the organism is a bacteria.

20. (currently amended) A method of making medium chain length PHA comprising growing a transgenic organism selected from the group consisting of bacteria and plants, the organism producing polyhydroxyalkanoate (PHA) and expressing a transgene encoding an enzyme having the catalytic activity of 3-hydroxyacyl-ACP thioesterase and expressing one or more transgenes encoding enzymes having the catalytic activity of acyl-CoA synthetase or acyl CoA transferase, with substrates for fatty acid biosynthesis.

21. (canceled).

22. (currently amended) The method of claim ~~21~~ 20 wherein the acyl-CoA synthetase is 3-hydroxyacyl-CoA synthetase.

23. (currently amended) The method of claim ~~21~~ 20 wherein the organism further express a PHA synthase.

24. (previously presented) The method of claim 22 wherein the organism further express a PHA synthase.

25. (original) The method of claim 24 wherein the organism expresses an enzyme selected from the group consisting of 3-hydroxyacyl-ACP thioesterase, medium chain length PHA synthase, and medium chain length 3-hydroxy fatty acid acyl CoA synthase, wherein the organism is a plant cell, plant tissue, or whole plant.

26. (original) The method of claim 24 wherein the organism expresses an enzyme selected from the group consisting of 3-hydroxyacyl-ACP thioesterase, a PHA synthase that incorporates medium chain length hydroxy acids, and medium chain length 3-hydroxy fatty acid acyl CoA synthetase, wherein the organism is a bacteria.

27-28. (cancelled)

29. (currently amended) The organism of claim 10 wherein the bacteria is *E. coli*, the bacteria expresses 3-hydroxyacyl-ACP thioesterase and wherein 3-hydroxy acids are secreted into the culture medium.

30. (new) The method of claim 13, wherein the bacteria is *E. coli*, the bacteria expresses 3-hydroxyacyl-ACP thioesterase and wherein 3-hydroxy acids are secreted into the culture medium, further comprising collecting the 3-hydroxy acids from the medium.